

31
A N
E N Q U I R Y

INTO THE
ORIGIN AND NATURE
O F
M A G N E S I A A L B A,
AND THE
PROPERTIES OF EPSOM WATERS.

DEMONSTRATING,
THAT MAGNESIA MADE WITH THOSE WATERS
EXCEEDS ALL OTHERS.

By D. I N G R A M,
PROFESSOR OF ANATOMY AND SURGERY,
AND SURGEON TO CHRIST'S HOSPITAL.

L O N D O N:

Printed for W. O W E N, near *Temple-Bar*, *Fleet-Street*

MDCCLXVII.

[Price One Shilling.]

24170 PM 2

2015-10-10

10:00 AM - 10:30 AM

10:30

10:30 AM - 11:00 AM

11:00

11:00 AM - 11:30 AM

11:30

11:30 AM - 12:00 PM

12:00

12:00 PM - 12:30 PM

12:30 PM - 1:00 PM

1:00

1:00 PM - 1:30 PM

1:30

1:30 PM - 2:00 PM

C O N T E N T S.

Historical account of *Magnesia*.

Experiments to shew the various gravities of the
several forts.

Criteria of purity.

Effects of acids with it.

Observations on the same.

A synopsis of *Epsom* and *Jessop's Well* waters.

Of *Epsom* waters in general and particular.

Disorders they formerly relieved and cured.

Opinion of authors of their virtues.

Reasons for preparing *Magnesia* with them.

The uses of *Magnesia* in several disorders.

Directions for taking *Magnesia*.

ADVERTISEMENT.

THE *Epsom* Waters and *Magnesia* are sold by *W. Owen*, the Mineral Water-Warehouse, near *Temple-Bar* ; at *Morris's* Coffee-House in *Epsom*; and by *Dr. Ingram* in *Arundel-Street*, who prepares *Magnesia*.



O F

MAGNESIA ALBA.

THIS technical term has long been used by Alchemists and Chemists to describe any substance, whether of a calcareous nature, a *caput mortuum*, or any earthy body, which in colour is white, in weight light, and to the palate insipid; but in particular to express such substances as have a peculiar power of attracting or absorbing a nitrous acid from the air when exposed openly, by which its weight is increased and whiteness heightened.

It is not above half a century since a *Magnesia* was first prepared for internal uses. Some say a

B

German

German (*Helwigius* the great traveller) discovered it, and carried it into *Italy*; however that be, it was originally prepared and administered at *Rome* by the Jesuits, who, for a long time, kept it a secret for the profits arising from the sale. Others tell us that *Kofferton*, a *German*, and physician to the prince abbot of *Kempten*, procured the secret from an *Italian* monk, which he soon after communicated to a brother physician; and this last conveyed it into *Switzerland*, where it was first known under the name of the Countess of *Palma's* Powder. But which of these was the first discoverer, I will not undertake to determine.

In a short time it spread into *Germany*. The physicians from repeated trials approved and preferred it, as a mild cathartic, to all drastic purges, as a Medicine long sought after, being safe, pleasant, and most proper for stomachic and intestinal disorders; and though this Medicine in those days was greatly inferior to what has been prepared since in *England*, yet its salutary virtues were foreseen, proclaimed and extolled through most parts of the continent.

It reached *Basil* about 1710, and so much increased in esteem, that a few years after it was placed in the collection of Medicines; and I think *Lancisi*, the Pope's physician, was the first who published a process, which was about 1717.

This process is tedious and complicated, not worth noticing here, being almost wholly different from the improvements made, and alterations in preparing it at this time. Besides, there is not any thing in his prescription worth regarding, except a hint, that a *Nitrous Acid is the Basis of Magnesia*. However, his publication opened the way for extending the several experiments since made to bring this Medicine to perfection.

About the year 1720, a *French* chemist suggested some improvements of *Lancisi's* Recipe; for, says he, *An earth may be obtained by separating the mother ley of nitre, by a solution of a fixed alkaline salt.*

Soon after, almost every *German* chemist made experiments to purify this Medicine. No one laboured more than the late skilful and learned

Hoffman, who in 1722 wrote a Dissertation entitled, *Animadversions and Experiments concerning Magnesia*; and very accurately observed, *that in the residuum after purifying nitre, are found the same principles as those from which Magnesia is procured*. He calls *Magnesia*, a grateful, insipid, laxative powder.

His several curious experiments with nitrous acids and fixed alkaline salts, such as those of Tartar, Wormwood, &c. soon ascertained a better formula of procuring not only a finer *Magnesia*, but one more innocent and inoffensive than any made before in *Italy*, *Germany*, &c. by his predecessors and contemporaries. From his writings farther improvements have been made, but not in *England* till twenty-six years after Dr. *Hoffman* published his Dissertation; for until 1748 it was scarce known only by name: and possibly to this day it would have been a *caput mortuum* in our capital shops, had not Dr. *Cadogan* at that time published his ingenious Essay upon Nursing and Management of Children, a performance which deserves the attention of all parents who are concerned for the health and happiness of their children.

To this gentleman we are greatly indebted, not only for his publication, but his attention to the operations of this Medicine, and his tenderness in administering it to the poor orphans, whilst physician to the *Foundling Hospital*.

The success he met with in his public and private practice, and his endeavours to make it known by communicating, without reserve, his sentiments, undoubtedly were the cause of its general reception.

Soon after 1748, the Dispensatories of *Edinburgh*, *Quincy*, *James* and *Lewis* adopted a method of preparing it, and in most of the foreign Pharmacopoeias a prescription was set forth; but not one of them was so instructive as could be wished.

Our chemists, druggists, and some apothecaries in town now began to prepare this Medicine, and it is evident they entered on different processes; for, from the experiments I made of their several preparations, I found that there is not two to be met with alike. Hence a reason may be assigned why the afflicted have complain-

ed of some disagreeable effects, as Mr. *Glass* and others have observed.

This was the reason, probably, which induced the late Dr. *Pitt* to desire that Mr. *Glass*, surgeon of *Oxford*, would undertake to retrieve the character of this Medicine, which he was well assured, when prepared in purity, would prove worthy of his attention and labour.

We find he prepared a quantity at first only for trial, which by his account far exceeded all others in every respect; for by an accurate experiment a cubic inch of his was found to contain only forty-seven grains; whereas a cubic inch of two others, one, prepared at *Apothecaries Hall*, weighed 106, the other 108; and farther, that his was superior in whiteness when compared, and in insipidness when tasted, which encouraged him to proceed to make a quantity for sale.

So much for the progressive improvements of this Medicine, from its origin at *Rome* to the time when Mr. *Glass* first published his Essay, about the year 1764.—Pleased with his performance, and having often read it, I came to a resolution

lution to purchase a box of his preparation, and a sample of the several sorts made in *London*, *Germany*, and the country, and compare them with each other to ascertain their several gravities. This was by carefully filling an ounce measure (such as the Apothecaries use) with the powder; and these appear as follows:

MAGNESIA *Prepared by*

| | | Grains. |
|---|-------|-------------------|
| Messieurs Glafs, an ounce measure weighed | 62 | |
| B—d—h | _____ | 70 |
| B—k—l and B— | _____ | 80 |
| K—n | _____ | 92 |
| S—l—r | _____ | 98 |
| E—v—n | _____ | 100 |
| S—n—r | _____ | 102 |
| Sc—t—r | _____ | 108 |
| W. and G. | _____ | 109 |
| K—n—t | _____ | 109 $\frac{1}{2}$ |
| B—k—y | _____ | 88—109 |
| J—n—f—n | _____ | 110 |
| Sh—b—n | _____ | 112 |
| G—n and T—d—l | _____ | 117 |
| C—l—f—a | _____ | 120 |
| D—l—m—y | _____ | 124 |
| B—t—t and S—p | _____ | 126 |
| O—d—m | _____ | 127 |
| T—n—nd | _____ | 129 |
| St—l—d | _____ | 132 |
| A—p—y—h—l | _____ | 135 |
| Sp—s | _____ | 138 |
| W—n—h | _____ | 142 |
| G—d—f—y | _____ | 154 |
| H—w—s | _____ | 150 |
| C—b—n | _____ | 156 |
| D—l—t—y | _____ | 172 |
| German | _____ | 182 |
| | | These |

These respective weights are as exact as I could make them. It must be confessed, on account of parts not lying equal, there will be little cavities or interstices; for which reason, a grain or two, more or less, cannot be ascertained. This I proved by measuring twice and oftener; and I am told, if fine flour is measured two or three times in a bushel, it will vary in weight at least half a pound or more.

Farther, experience has taught me, that if two preparations are made the same day, in every particular very exact, one will differ from the other in weight, &c.

It must be admitted that *lightness* is an excellency; but it neither is, nor can be what Mr. *Glass* calls a determinate criterion of purity; because weight never can shew what quantity of impure or acrid salts, or heterogeneous qualities it contains, nor inform us of such parts as are indissoluble in the stomach; therefore, to form a more perfect knowledge of this medicine, I had recourse to three experiments.

First, Ten grains of every sort of *Magnesia* I had procured, were put in the same number of
phials

phials (28), and to each, one ounce of spirit of vitriol (made weak), which was by a very little at a time dropt on the powder.

By this operation its purity was discovered, because it is evident that medicine is best which entirely dissolves, and leaves the spirit transparent.

Secondly, I put about ten grains to a spoonful of distilled vinegar: this shews its purity, by taking off the acidity of the vinegar.

Thirdly, I added 30 drops of spirit of vitriol to a spoonful of water, and then to these put about five grains of *Magnesia*. This informed me of its impurity, by not totally dissolving the powder, nor taking away the sourness of the spirit.

These are easy experiments, and will take up little time; therefore I could wish to recommend them to every one who makes use of this medicine.

But these are not sufficient; for I believe a genuine *Magnesia* should also have the following

ing characteristics; that is, it should be quite impalpable, without smell, almost tasteless, and free from grittiness; it should float in water or milk at first or till well stirred, and intimately mix with any fluid: when spirit of vitriol (as in the last experiment) by little and little is put to it, the ebullition should be quick and smart, the vapours clear, free from noxious smell; no air-bubble, brownish clouds or dirty circles at or about the surface; above all, scarce any parts should be left in the bottom of the phial, and the spirit should remain in its natural lucidity.

These observations may be worth regarding to prevent impositions; since that *Magnesia* which has not these characteristics, may produce many mischievous effects; for if it should remain as a calcareous substance, and block up the inferior orifice of the stomach, thirst, vomitings, pain, cramp in the bowels and organs of digestion, inflammation, bloody flux, piles, and several other disorders may be produced; and these from the noxious acrid salts remaining in the composition, which I am afraid has been often the case. On the contrary, a pure edulcorated
Mag-

Magnesia will act as an absorbent, a diuretic, and a gentle laxative.

So much with respect to the purity of this medicine: it may now be proper to give some account of those twenty-eight different sorts tried with spirit of vitriol.

The first (*Oxford*), though the lightest, did not entirely dissolve, but on standing deposited some parts, rather of a dark brown colour, different greatly from the whiteness it possessed before; the liquor became transparent, the ebullition was small, and the dissolution took up some time; upon the whole, this was superior to all others in every respect.

The *German* sort was much inferior to every other. Instead of dissolving, it deposited a large ponderous calcareous sediment, and seemed but a little affected with the acid. From the ebullition arose blackish fetid fumes; the liquor remained almost clear.

About six of the sorts above-mentioned likewise deposited a calcareous indissoluble matter; the

the fumes were nearly like those of the *German*, black and noxious, though not so bad.

About ten were nearly alike, producing a quick and hasty ebullition, with cobweb-like suspensions, and muddy circles at the top; on standing the spirit became brassy yellow.

The others on standing turned the spirit yellowish, were replete with foul clouds suspended nearer the bottom, also a circular brownish ring at the surface.

From this representation it appears that all those which turned the spirit yellow, contained acrid and alkaline salts.

Those which appeared with muddy clouds, dirty circles on the surface with broken suspensions, retained acid salts; and the dirty colour was owing to the impurity of the waters used in edulcoration; since I have found the like in several of my own experiments, in using the *Thames* and *New River* waters, neither of which are the best to produce this medicine perfect, not even after depuration by alum, though it will throw down
some

some of the earthy parts.—At *Apothecaries Hall* the River waters have been distilled to separate the gross earthy particles; but such methods neither did nor will answer the intentions of perfection.

After spending my time for near a year and half on these and the like experiments for further improvement, I examined the several medical springs about this metropolis, to obtain a knowledge of those which abounded most with an acid nitrous salt and an alkaline earth to see how far they would contribute to my purposes. *Barnet*, *Acton*, *Dulwich*, *Stretcham*, and several others were examined, most of which did not contain a quantity of nitre sufficient. *Epsom* and *Jessop Wells* on *Stoke Common* next underwent trials; and though *Stoke Wells* had a great portion of nitrous salts, yet having a vitriolic acid, they by no means could serve my purposes. — At last I fixed on those at *Epsom*, which answered by repeated experiments exactly in every respect what authors have said; viz. they are of a nitrous nature, abounding with an acid salt and an alkaline earth, gently cooling and purgative; and as for their virtues, they were celebrated even in the year 1635.

An

An examination of them and *Jessop* Waters is here subjoined.—To this impartial view it will be necessary to add what has been said by eminent men of the salubrity of *Epsom* Waters, and the diseases they have both relieved and cured, in order to shew my reasons for first conceiving that a *Magnesia* made with them would be superior to all others in *Europe*; and especially as one of the axioms in the medical science seems to support such suggestions; which is, that every Medicine will possess the good or bad properties of those ingredients of which it is composed.

Of EPSOM WATERS in particular, and Infirmities cured by them.

EPSOM Wells, or their nitrous purging waters, were the first of the sort discovered in *England*, some time about the year 1618; they encreased in reputation till about 1727, when they began to be neglected.

In about 1640, Dr. *Grew* analized them, and found that their contents were a soluble bitter acid salt; that this salt consisted of eight parts
of

of nitre, and one of earth, but not a grain of alum, as formerly conjectured; that the salts were a grey white colour, unfigured and soft, somewhat like the clayed sugar of *Barbadoes*. The waters in nature were diluent, absorbent, diuretic, and gently cathartic, consisting of a true calcareous nitre, innocent in operating.

What is very remarkable is, that in boiling these waters in a copper vessel, they do not so much as partake of a verdigrease tincture: this experiment evinces their innocent and inoffensive principles.

They are moderately clear, in taste a little bitter, somewhat saltish, nitrous, resembling spirit of nitre.

On account of these virtues they were held in the highest estimation, and celebrated through *Europe* for curing various disorders; which being confirmed from time to time by a multiplicity of cases, the nobility and gentry, and even foreigners resorted to *Epsom*, insomuch that this small village was soon enlarged to a great extent.

As an argument that these waters are nitrous, and nearly *a Magnesia in nature*, it may be observed, that when the earth about the inside of the Well is exposed for some time to the open air, a white incrustation appears, which is a true nitre;—and farther, if we add what Mr. *Glass* has said in his treatise on *Magnesia*, it will confirm every article advanced. He expresses himself in the following terms,

“ Page 12. *Magnesia* is most commonly prepared from the factitious *Epsom* salts, and may be obtained in great purity from them; also from the medicinal Waters of *Epsom*, &c.”

Again, Page 29. “*Magnesia*, well diluted, and assisted by proper exercise in curing, will be found little, if at all, inferior to the justly celebrated waters of *Epsom*; and this is obvious; for the virtues of these and the like waters depend principally if not wholly on their bitter acid salts; and the purgative quality of this salt *on its alkaline Basis, which is Magnesia*.”

Again: “ The *Epsom* waters for many years
 “ were very justly celebrated for the continual
 “ cures they performed.”

Dr. *Grew*, *Moult*, and other judicious writers of the last century, confirm what Mr. *Glass* has advanced; for their experiments proved that these waters abounded with a bitter purgative salt, and have an alkaline basis, which are the two principles of a natural *Magnesia*.

Now, if to these observations is added another, which is, that either *Epsom* waters or salt will redden flesh when first soaked and then boiled in them, and that there is nitre in the form of isicles about the brickwork of the Wells, I suppose then the arguments will appear all well supported.

From what I have seen, and as far as I know, these nitrous waters are nearly alike the cutiliæ of the *Romans*, as mentioned by *Agricola* and *Cælius Aurelianus*. Both these authors have spoken largely of drinking nitrous purging waters in summer (at it was usual at *Epsom* many years since); and possibly it would be well for health-
 sake

take to see these waters restored to their primitive uses, especially since they are absolutely necessary as a preparative before entering on any chalybeate waters.

History, from the days of *Hippocrates* down to *Pliny*, and from his time to those of *Dr. Hoffman*, informs us, *that nitrous purging waters were drank in the spring and fall, to cleanse the body, and prevent diseases*; and it is amazing they should be neglected by us!—But let us proceed in our enquiry. It is evident by experiments formerly, as well as lately made, that there is less fixed earth and more nitrous principles in these waters than in most others, and no vitriolic acid abounding with sulphur. It is also well known that they have a peculiar purging quality, which insinuates more deeply into the coats of the stomach and bowels than any other.

These virtues induced physicians to prescribe and strongly recommend these waters to every one who intended to drink those of *Tunbridge*, to cleanse and empty the stomach and bowels. On such advice the gentry resorted to *Epsom* first,

for ten days or a fortnight, which was allowed to be sufficient as a preparative.

To some the salts were prescribed to be taken whenever *Tunbridge* waters proved costive; a small quantity was administered either in the first or last glass, to prevent inflammatory symptoms.

If prudence hereafter should direct this old practice to be renewed, health possibly would find the advantage; for by drinking *Epsom* waters at first, and taking *Magnesia* made from them, before entering on chalybeats; costiveness, sudden flushings, burning heats, inflammations, and many other unforeseen disorders might be prevented.

These hints, I conceive, are not improper for those also who intend visiting *Bath*, *Buxton*, &c. at the usual seasons; and I think they may be of more consequence than at first sight appears.

Practice long since taught us that the use of these waters need not in general be continued above ten days or a fortnight at a time (except in severe cutaneous disorders and chronical distempers)

temper) since their peculiar purgative qualities relieve the stomach, provoke the appetite, and soon cure; and as far as books have taught me, and a little practice, I think there is not in any dispensatory, or in the whole tribe of medicine, one cathartic which operates with more safety, and agreeableness.

If the authorities of eminent physicians, who took no small pains heretofore to watch over the effects of these waters, should have any weight, it cannot be inconsistent now to enumerate the disorders for which they were recommended in those days, *viz.* for washing off all crude, viscid, acid, bilious, and corrupted humours in the first passages; for inveterate scurvies, *English* leprosy, worms, sore heads, red faces, gravel, stone, heat of urine, sore legs, costive habits, all cutaneous eruptions, lost appetite from drinking too liberally, jaundice, stones in the liver, or in the biliary canals, and most disorders of the liver of the inflammatory kind: in such cases the afflicted stayed a month or more for a cure. Also, as they purge without thirst, dryness of the mouth, sickness, gripings, faintness, or dejection of spirits; so in a fullness of the lymphatics and vessels in general, whether

occasioned by phlegmatic humours or crude fluids, they were prescribed.

For scrophulous and scorbutic humours, inflammations of the eyes, king's evil, hypochondriac and melancholic disorders, and for costiveness, which is often the foundation of several chronical distempers, such as cholics, pains in the bowels, &c. the waters were directed to be drank warm going to-bed. For heart-burn, indigestion, hysterical affections, disturbed sleep, pains in the head, tumours and swelling in the legs and feet after fifty, &c. the waters were beneficial, acting as a diluter, diuretic, and a mild cathartic, fanning the blood with their cooling nitrous principles, without agitating the fluids or fermenting the humours.

Having collected from the writings of medical authors their opinions of the virtues of *Epsom* waters in curing disorders formerly; having also related their constituent principles, and proved them to contain the same now as heretofore, viz. eight parts nitre and one alkaline earth; it thence seemed probable, that these waters would constitute an exceeding fine *Magnesia*, and one

one of superior quality to any herein mentioned, provided the various processes were well attended to.

After several experiments with them by different menstrua, by solution, decoction, depuration, and several operations in pharmacy, I at length found out a process for preparing this medicine, which, as soon as finished, I thought proved in the greatest purity. From this I was induced to repeat the operation, and try its effects as cases should happen; when finding its operations mild, without any uneasiness, sickness, gripings, &c. I made further trials, and prepared a quantity to give to my friends and acquaintance; and on their report, I set about making some for sale, after having first proved it entirely pure, by the following experiments, which are submitted to those much better versed in medicine; and on their sound judgement only I will rely, entirely laying aside the little I have acquired.

1. A hollow cubic inch (made of tin) was filled with *Magnesia powdered*. It weighed only 21 grains.

2. A

2. A *solid* cubic inch weighed 40 grains.

3. An ounce pewter measure (apothecaries) weighed 40 grains in powder.

4. A solid drachm put into ten drachms of water, floated 15 minutes

5. A solid drachm in an ounce of rectified spirit of wine; floated.

6. Ten grains were put in a phial, to which spirit of vitriol by drops were added, on which a brisk, smart ebullition ensued; the spirit on standing became limpid, and the medicine almost entirely dissolved, leaving at the bottom only little small particles or atoms very white.

7. Thirty drops of spirit of vitriol were mixt with a spoonful of water, to which five grains were put, which soon after absorbed the acidity of the vitriol. In the two last experiments, no noxious blackish fumes arose, but a small white smoak or vapour, without air-bubbles or dirty circles on the surface; no floating muddy clouds

or

or opake yellow fufpensions, nor tawney hue in the fpirit.

As to the colour of this Medicine, it is extremely white, and much more fo than ftarch ; in tafte and fmell quite infipid and impalpable ; mixes readily with milk, water and the like ; and leaves no grittinefs in the glafs or cup.—On thefe proofs, poffibly, men of fkill will admit this Medicine to be in purity ; and without any impropriety we may call it either a *New* or *Epfom Magnesia*, becaufe it certainly does abound with the fame principles as *Epfom* waters ; and if the waters fhould be admitted an improvement or an addition to its medical qualities, it is what I have long been fearching after.

Reflections on what has been advanced, may induce fome people to fmile in regard to *Magnesia* ; for we have been travelling for years to *Italy*, *Germany*, *France*, &c. to bring over with great labour, what ? The very Medicine that is really in nature no farther from this metropolis than 15 miles. Happy ifland ! where almoft all the affiftance that health and nature require, abounds for the ufe and benefit of its inhabitants.

As

As there are many families not well acquainted with this Medicine, it may be pertinent to relate the several disorders which *Magnesia* relieves, and what quantity is to be taken.

Infants in the first month may take from four grains and upwards, to carry off the black and green stools, watery gripes, and acidities in the stomach and bowels. This being tasteless, may be given in water-gruel or any spoon-meat.

For worms in children, it may be mixed with sugar-candy ground, honey, treacle, or the like, for such as will not, without trouble, take common medicines.

For the heart-burn, two tea-spoonfuls may be taken in milk and water, or in either of them, any time of the day, or going to-bed, and repeated as occasion requires; for the Medicine has been found to act as a lenient purge, a great absorbent, and, therefore, a corrector of acidities.

For bilious complaints, jaundice, inflammatory liver cases, stone in the bladder or gall-bag, it should be continued for some time; and a further
assistance

assistance may be given by drinking liberally of a whey prepared with equal quantities of *Epsom* water and milk.

It may be taken in *Tunbridge*, *Pyrmont*, *Bristol*, or in any mineral chalybeate waters, and should not be neglected in costive cases.—N.B. Bruise the medicine first, then by little and little, put to it the milk or water, or what it is intended to be taken in.

It proves efficacious in the stone, gravel, heat of urine, several species of scurvies, and most skin diseases, with the whey mentioned; also in the several distempers before recited, which the waters formerly cured.

To prevent further prolixity, I shall recite only one case of the effects of a common *Magnesia* from my own experience, and this as short as possible.

The wife of Mr. *Hollings*, apothecary, in *St. James's Place*, had laboured for about ten months under a jaundice, stones in the biliary ducts and liver. In *February* 1767, my opinion was desired.
—She

—She took an emetic of salt of vitriol, next day a purge of the gums and steel, at night two tea-spoonfuls of *Magnesia*, and the same quantity twice a day daily; during which she drank at a quart of whey in 24 hours, made with nitrous purging waters, and an equal quantity of milk. At the eight days end, a stone from the liver as large as a common nutmeg was discharged by stool, next day another of the same size, and several small ones afterwards.

The twelfth day she was recovered so well, that in a hackney-coach she rode at least ten miles. She is now free from her disorder, and enjoys as good a state of health as at any time before.

If what has been advanced, should give the least satisfaction to the reader, possibly the uses of *Magnesia* and *Epsom Waters* will be better understood in regard to their several disorders. They have, and may relieve, since at this time many families are even strangers to the Medicine and Waters, as well as their salutary effects.